WHAT IS CLAIMED IS:

1. A positive-working chemical-amplification photoresist composition which comprises, as a uniform solution in an organic solvent:

(A) 100 parts by weight of a film-forming resinous compound having acid-dissociable solubility-reducing groups in the molecule and capable of being imparted with an increased solubility in an aqueous alkaline solution by interaction with an acid , which resinous compound is a copolymeric resin comprising monomeric units of an ester of acrylic or methacrylic acid;

(B) from 1 to 20 parts by weight of an acid-generating compound which is an onium salt compound having a fluoroalkylsulfonate as the anionic constituent;

(C) from 0.01 to 5 parts by weight of a phosphorus-containing oxo acid, and

(D) an amine selected from the group consisting of secondary amines and tertiary amines, in an amount sufficient to exhibit a quenching effect.

2. The positive-working chemical-amplification photoresist composition as claimed in claim 1 in which the phosphorus-containing oxo acid as the component (C) is selected from the group consisting of phosphoric acid, phosphorous acid, phosphonic acid, phosphinic acid, phenylphosphinic acid and phenylphosphonic acid.

3. The positive-working chemical-amplification photoresist composition as claimed in claim 1 in which the copolymeric resin as the component (A) consists of from 50 to 85% by moles of the monomeric units of hydroxystyrene, from 10 to 30% by moles of the monomeric units of styrene and from 2 to 20% by moles of the monomeric units of an ester of acrylic acid or methacrylic acid.

4. The positive-working chemical-amplification photoresist composition as claimed in claim 3 in which the ester of acrylic or methacrylic acid is a tert-alkyl acrylate or methacrylate.

5. The positive-working chemical-amplification photoresist composition as claimed in claim 4 in which the tert-alkyl acrylate or methacrylate is tert-butyl acrylate or methacrylate.

6. The positive-working chemical-amplification photoresist composition as claimed in claim 1 in which the amount of the phosphorus-containing oxo acid as the component (C) is in the range from 0.1 to 2.0 parts by weight per 100 parts by weight of the component (A).

7. The positive-working chemical-amplification photoresist composition according to claim 1 wherein the amine is triethylamine, tributylamine, dibutylamine or triethanolamine.

8. A process for forming a patterned resist layer which comprises:

a) coating a substrate with a positive-working chemical-amplification photoresist composition which comprises, as a uniform solution in an organic solvent:

(A) 100 parts by weight of a film-forming resinous compound having acid-dissociable solubility-reducing groups in the molecule and capable of being imparted with an increased solubility in an aqueous alkaline solution by interaction with an acid , which resinous compound is a copolymeric resin comprising monomeric units of an ester of acrylic or methacrylic acid;

(B) from 1 to 20 parts by weight of an acid-generating compound which is an onium salt compound having a fluoroalkylsulfonate as the anionic constituent;

(C) from 0.01 to 5 parts by weight of a phosphorus-containing oxo acid, and

(D) an amine selected from the group consisting of secondary amines and tertiary amines, in an amount sufficient to exhibit a quenching effect.,

b) drying the coated substrate to form a photoresist layer,

c) patternwise exposing the photoresist layer to actinic rays to form said patterned resist layer.

9. The process according to claim 8 wherein said actinic rays are from a KrF excimer laser beam of 248 nm.

10. The process according to claim 8 wherein said actinic rays are X-rays.

11. The process according to claim 8 wherein said actinic rays are electron beams.

12. The process according to claim 8 wherein the substrate is a semiconductor wafer.

13. The process according to claim 12 wherein the semiconductor wafer comprises silicon.

14. The process according to claim 12 wherein the substrate to be coated has an undercoating film containing nitrogen or containing phosphorus and/or boron.

15. The process according to claim 14 wherein the undercoating film comprises at least one nitrogen-containing material which is SiN, Si_3N_4, SiON or TiN.

16. The process according to claim 14 wherein the undercoating comprises at least one phosphorus and/or boron material which is phosphosilicate glass, borosilicate glass or borophosphosilicate glass.

17. The process according to claim 8 wherein the phosphorus-containing oxo acid as the component (C) is selected from the group consisting of phosphoric acid, phosphorous acid, phosphonic acid, phosphinic acid, phenylphosphinic acid and phenylphosphonic acid.

18. The process according to claim 8 wherein the copolymeric resin as the component (A) consists of from 50 to 85% by moles of the monomeric units of

hydroxystyrene, from 10 to 30% by moles of the monomeric units of styrene and from 2 to 20% by moles of the monomeric units of an ester of acrylic acid or methacrylic acid.

19. The process according to claim 18 wherein the ester of acrylic or methacrylic acid is a tert-alkyl acrylate or methacrylate.

20. The process according to claim 19, wherein the tert-alkyl acrylate or methacrylate is tert-butyl acrylate or methacrylate.

21. The process according to claim 8 wherein the amount of the phosphorus-containing oxo acid as the component (C) is in the range from 0.1 to 2.0 parts by weight per 100 parts by weight of the component (A).

22. The process according to claim 8 wherein the amine is triethylamine, tributylamine, dibutylamine or triethanolamine.